8.2 Solving Two-Step Equations

A two-step equation contains two operations. To solve a two-step equation, use inverse operations to undo each operation in reverse order of the order of operations.

Example: Solve each equation. Check your solution.

a.) $3a + 9 = 33$

$-9 \quad -9$

$3a = 24$

$\div 3 \quad \div 3$

$a = 8$

b.) $6x + 1 = 25$

$-1 \quad -1$

$\frac{6x}{6} = \frac{24}{6}$

$x = 4$

Example: Solve each equation. Check your solution.

c.) $4x - 5 = -33$

$+5 \quad +5$

$\frac{4x}{4} = \frac{-28}{4}$

$x = -7$

d.) $2m + 8 = 32$

$-8 \quad -8$

$\frac{2m}{2} = \frac{24}{2}$

$m = 12$

Example: Solve each equation. Check your solution.

e.) $\frac{1}{5}p - 12 = 20$

$+12 \quad +12$

$\frac{5}{1} \cdot \frac{1}{5}p = 32 \cdot \frac{5}{1}$

$p = 32 \cdot 5$

$p = 160$

f.) $8 = 15 + \frac{1}{3}n$

$-15 \quad -15$

$\frac{3}{1} \cdot -7 = \frac{1}{3}n \cdot \frac{3}{1}$

$3 \cdot -7 = n$

$-21 = n$

Example: Solve each equation. Check your solution.

g.) $-\frac{1}{6}x - 3 = 2$

$+3 \quad +3$

$\frac{6}{-1} \cdot -\frac{1}{6}x = 5 \cdot \frac{6}{-1}$

$x = 5 \cdot -6$

$x = -30$

h.) $\frac{1}{4}w + 6 = 9$

$-6 \quad -6$

$\frac{4}{1} \cdot \frac{1}{4}w = 3 \cdot \frac{4}{1}$

$w = 3 \cdot 4$

$w = 12$

Example: Solve each equation. Check your solution.

i.) $9 - t = -34$

$-9 \quad -9$

$\frac{-1t}{-1} = \frac{-43}{-1}$

$t = 43$

j.) $-15 - b = 44$

$+15 \quad +15$

$\frac{-1b}{-1} = \frac{59}{-1}$

$b = -59$

k.) $-6.5 = -4.3 - n$

$+4.3 \quad +4.3$

$\frac{-2.2}{-1} = \frac{-n}{-1}$

$2.2 = n$

l.) $5 - x = 7$

$-5 \quad -5$

$\frac{-x}{-1} = \frac{2}{-1}$

$x = -2$

Example: Solve each equation. Check your solution.

m.) $2x + 1x - 27 = 3$

$3x - 27 = 3$

$+27 \quad +27$

$\frac{3x}{3} = \frac{30}{3}$

$x = 10$

n.) $4 - 9c + 3c = 58$

$4 - 6c = 58$

$-4 \quad -4$

$\frac{-6c}{-6} = \frac{54}{-6}$

$c = -9$

o.) $3.4 = 0.4m - 2 + 0.2m$

p.) $b - 3b + 8 = 18$